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Statistical Evidence, Assertions and Responsibility

Liat Levanon

The legal system has been ambivalent about naked statistical evidence. Addressing this ambivalence, the article explores the epistemological status of naked statistical evidence and its normative and practical implications. It is suggested that since naked statistical evidence cannot generate knowledge, it cannot be the basis for assertions of facts; and assertions of facts are practically and legally important: they are essential in order to establish the court's responsibility for its decisions and its errors. Such responsibility is needed in order to maintain the legitimacy of the legal system; to avoid unfairness to defendants; and to ensure that legal decision-makers have no valid claims against the decision-making arrangement. Resultantly, the legal system is inclined to avoid statistical evidence altogether.

Key words: statistical evidence, knowledge, assertions, responsibility

Introduction

Advances in the social sciences in recent decades may have an unprecedented impact on legal modes of proof. The use of statistical methods to analyse human behaviour has resulted in

the accumulation of data that has the potential to alter the way in which facts are legally established. These statistical data are now readily available for use as legal evidence. If research establishes that, say, males of a certain race and age are more likely than random members of the population to commit certain types of crimes, these data may well have probative value in a trial against such a defendant for such an offence. But advances in social sciences have not only added statistical data to the traditional evidential substrate of trials; they have also stimulated rethinking of traditional evidence and modes of proof. After all, much like the newly accumulated statistical data, traditional evidence such as eye witness testimony can also be described in statistical terms.¹ The potential impact on legal fact-finding is therefore hard to ignore.

The legal system has found itself bewildered by these advances. It has remained suspicious about full incorporation of the new statistical data in trials,² but the grounds for this suspicion have proven hard to articulate. Much effort has been invested in the attempt to explain how the new data, which has been termed ‘naked statistical evidence’ (NSE), is different from traditional evidence.³ Some of the explanations are epistemological, demonstrating that NSE cannot generate

* This article has benefitted greatly from comments by Federico Picinali, Amit Pundik and Paul Roberts. Special thanks, as always, to David Enoch for his support and encouragement and for his contribution to the development of my ideas in this article.

¹ See P. Tillers, ‘If Wishes Were Horses: Discursive Comments on Attempts to Prevent Individuals from Being Unfairly Burdened by Their Reference Classes’ (2005) 4 *Law, Probability and Risk* 33.

² This suspicious attitude finds expression in the provisions regulating the admissibility of propensity evidence in the Criminal Justice Act 2003 s 101(1), and in the broad discretion left for trial judges in interpreting these provisions. See [bad character evidence article, section 2].

³ See D. Enoch, L. Spectre and T. Fisher, ‘Statistical Evidence, Sensitivity, and the Legal Value of Knowledge’ (2012) 40 *Philosophy and Public Affairs* 197; D. Enoch and T. Fisher, ‘Sense and “Sensitivity”: Epistemic and Instrumental Approaches to Statistical Evidence’ (2015) 67 *Stanford Law Review* 557; A. Stein, *Foundations of Evidence Law* 100 (New York and Oxford: Oxford University Press, 2005) 80-91; M. Smith, *Between Probability*

knowledge. Other explanations are normative or practical, demonstrating that admission of NSE is undesired for ethical reasons or for policy reasons. In an insightful paper, David Enoch, Levi Spectre and Talia Fisher have claimed that knowledge has no legal value, but they have sought to demonstrate that epistemological and practical explanations are not totally independent of each other. The authors have further suggested that a deeper story about the relation between the two is yet to be told.⁴

The article advances the argument that knowledge does have legal value: knowledge is the only possible foundation for legal assertions of liability and guilt, and assertions, in turn, guarantee the court's responsibility for its decisions and indeed for its errors. Responsibility is needed in order to maintain the legitimacy of the legal system, to avoid unfairness to defendants, and to ensure that decision-makers have no valid claims against the legal decision-making arrangement in cases of error. Since NSE cannot generate knowledge, decisions based on NSE cannot be the basis for assertions of liability and guilt and accordingly cannot give rise to the court's responsibility for errors. For this reason, the legal system is inclined to avoid relying on NSE altogether.

and Certainty: What Justifies Belief (Oxford and New York: Oxford University Press, 2016); [Bad Character Evidence article]; M.S. Pardo, 'Safety vs. Sensitivity: Possible Worlds and the Law of Evidence' 24 (2018) *Legal Theory* (forthcoming); D.T. Wasserman, 'The morality of Statistical Proof and the Risk of Mistaken Liability' (1991) 13 *Cardozo Law Review* 935; A. Pundik, 'Statistical Evidence and Individual Litigants: A Reconsideration of Wasserman's Argument from Autonomy' (2008) 12 *International Journal of Evidence and Proof* 303; A. Pundik, 'Freedom and Generalisation' (2016) 37 *OJLS* 189; A. Pundik, 'Against Racial Profiling' (2017) 67 *UTLJ* 175; C.R. Nesson, 'The Evidence or the Event? On Judicial Proof and the Acceptability of Verdicts' (1985) 98 *Harv. L. Rev.* 1357, 1378; F. Picinali, 'Generalisations, Casual Relationships, and Moral Responsibility' (2016) 20 *The International Journal of Evidence and Proof* 121; R.W. Wright, 'Causation, Responsibility, Risk, Probability, Naked Statistics, and Proof: Pruning the Bramble Bush by Clarifying the Concepts' (1998) 73 *Iowa L Rev* 1001, 1054.

⁴ Enoch, Spectre, and Fisher, 'Statistical Evidence, Sensitivity, and the Legal Value of Knowledge,' *ibid*, 220-221.

To unfold this argument, the article proceeds in four parts. The first part presents the problem. It discusses two of the main existing accounts of the conditions of knowledge that NSE fails to fulfil, namely the sensitivity condition⁵ and the normic support condition.⁶ It is demonstrated that these accounts do not explain why knowledge might be valuable for legal decision-making.

The second part starts considering the value of knowledge for legal decision-making. It advances the argument that legal decision-making (as we know it) involves assertions of liability and guilt and accordingly is subject to Timothy Williamson's knowledge norm of assertion.⁷ Legal decision-making must therefore adhere to the conditions of knowledge. Since NSE does not adhere to these conditions, it cannot be the basis for legal decisions.

The significance of assertions for legal decision-making is considered in the third and fourth parts. The third part discusses responsibility for errors. It is demonstrated that assertions give rise to decision-makers' substantive responsibility for errors in the sense proposed by T.M. Scanlon:⁸ assertions diminish the decision-maker's grounds to complain against the legal decision-making arrangement in case of error. Thus, a decision-maker who relies on NSE and avoids assertions would have a valid claim against the legal decision-making arrangement in case of error. This part further highlights another characteristic of NSE that prevents it from giving rise to the decision-maker's responsibility for errors. This characteristic is the logical impossibility to get all

⁵ See Enoch, Spectre and Fisher, 'Statistical Evidence, Sensitivity, and the Legal Value of Knowledge,' n.3 above.

⁶ See Smith, n 3 above.

⁷ T. Williamson, 'Knowing and Asserting' 105 (1996) *Philosophical Review* 489, 494; see also T. Williamson, *Knowledge and Its Limits* (Oxford: Oxford University Press, 2000). Many have accepted Williamson's knowledge norm of assertion, including, for example, J. Hawthorne, *Knowledge and lotteries* (Oxford: Oxford University Press, 2004); and J. Stanley in his earlier writing, eg in *Knowledge and Practical Interest* (Oxford: Oxford University Press, 2005).

⁸ T. M. Scanlon, *What We Owe to Each Other* (Cambridge Mass and London, England: The Belknap Press of Harvard University Press, 1998), chapter 6.

the cases right when relying on such evidence. Exploring a possible connection between the logical impossibility to get all the cases right and the conditions of knowledge is left for future research.

The fourth part of the article discusses the importance of substantive responsibility for the legal process. It considers the role of substantive responsibility in maintaining the legitimacy of the legal system; in preventing tragic errors that are particularly unfair to defendants; and in preventing unfairness to legal decision-makers.

Knowledge and Legal Decision-Making

Epistemological accounts of NSE have demonstrated that inferences from NSE about which the legal system is ambivalent cannot establish knowledge. A range of intuitive examples has been offered to support this conclusion, including the lottery example (where the proposition P is that I did not win yesterday's lottery, and the evidence E is the very high likelihood that I did not win the lottery); the gate-crasher example (where P is that a defendant gate-crashed; and E is that out of 1000 spectators who entered the stadium, 600 did not pay, and subsequently the probability of gate-crashing is 0.6 for each spectator);⁹ and the bus companies example (where P is that a red bus caused the accident; and E is that the red bus company operates 60% of the buses in town, and subsequently the probability that it was a red bus that caused the accident is 0.6).¹⁰ In all these examples, it seems clear that we do not know P despite its high probability; and we further would avoid making a legal finding of P, despite the fact that legal standards of proof are

⁹ L.J. Cohen, *The Probable and the Provable* (Oxford: Oxford University Press, 1977) 74-75.

¹⁰ This is a variation on the American case of *Smith v. Rapid Transit, Inc.* 58 N.E.2d 754 (Mass. 1945). See discussion in G. L. Wells, 'Naked Statistical Evidence of Liability: Is Subjective Probability Enough?' (1992) 62 *Journal of Personality and Social Psychology* 739.

often explained in probabilistic terms that appear to be satisfied in these examples: the civil standard of preponderance of evidence, which is relevant for the abovementioned examples, is commonly taken to be satisfied when E indicates that the probability of a fact is over 50%; and the criminal standard is commonly taken to be satisfied when E indicates that the probability of a fact is very high, usually at least over 90%.¹¹

It is nevertheless acknowledged that in some cases, statistical evidence does seem to generate knowledge and to support legal findings. One clear example is DNA evidence that is commonly relied on in criminal trials.¹² When it comes to DNA evidence we do seem to rely on bare statistics as sufficient foundations of knowledge and also as sufficient basis for legal findings.¹³

¹¹ For discussions of the quantification of the ‘beyond reasonable doubt’ standard see for example J. Franklin, Case Comment – *United States v. Copeland*, 369 F. Supp.(E.D.N.Y. 2005): quantification of the ‘beyond reasonable doubt’ standard (2006) 5 *Law, Probability and Risk* 159; J.B. Weinstein and I. Dewsbury, “Comment on the Meaning of ‘proof beyond reasonable doubt’” (2006) 5 *Law, probability and Risk* 167.

¹² But see Martin Smith’s radical proposal on DNA evidence in Martin Smith, ‘When Does Evidence Suffice for Conviction?’ (published online on 17 October 2017, *Mind*). See also scientific concerns about the validity of common inference from DNA evidence in H. Brayley-Morris et al., ‘Persistence of DNA from Laundered Semen Stains: Implications for Child Sex Trafficking Cases’ 19 (2015) *Forensic Science International. Genetics* 165.

¹³ Another example is the prediction that a rubbish bag Ernie has thrown down the chute which he has every reason to believe works well is now in the basement. This prediction is based on a generalisation: Ernie has previous experiences of thrown objects falling down to the ground; he generalises these previous experiences to infer that the garbage bag will also fall down to the ground. This generalisation includes a yet-unproven statistical assumption – that out of all the objects that are thrown, an extremely high portion (say 99.8%) falls down to the ground. See E. Sosa, ‘How to Defeat Opposition to Moore’ (1999) 13 *Philosophical Perspectives* 141-154. A similar example has been introduced by J. Vogel, ‘Tracking, Closure, and Inductive Knowledge’ in L.F. Steven (ed.), *The Possibility of Knowledge: Nozick and His Critics* (Totowa, N.J.: Rowman & Littlefield, 1987) 197, 206. In this example I leave ice cubes in a glass outside on a hot day; after several hours I can be said to know that the ice cubes have melted. For some attempts to explain these examples see D. Pritchard’s

To explain these examples, the conditions of knowledge have been explored.¹⁴ Enoch, Spectre and Fisher have observed the sensitivity condition for knowledge. The sensitivity condition uses counterfactuals to identify knowledge; it requires examining whether and how a belief that P, which is developed based on E, would change or would undergo qualification if in reality P were false.¹⁵ Sensitivity is formally defined as follows: E is sensitive evidence for P iff were P false then E would be false; or: in the closest possible worlds in which P is false, E would be false. While not endorsing sensitivity as a condition for knowledge, the authors did demonstrate that controversial NSE is insensitive to the truth: in the legal context, controversial NSE would have existed even had the defendant not been liable. By contrast, an eye-witness testimony or a DNA sample is sensitive evidence: it would not have existed had the defendant not been liable.

This, however, is merely an epistemological account, and the authors note that such an account does not yet explain why NSE should not be relied on to make a legal finding. In their view, the theoretical sensitivity condition can hardly bear significance for practical legal decisions, where other considerations (like accuracy) seem more relevant.¹⁶ Enoch, Spectre and Fisher therefore consider knowledge as having no legal value.

discussion in 'Anti Luck Virtue Epistemology' (2012) 109 *Journal of Philosophy* 247, especially on 251-252, and see also Pritchard's original statement of anti-luck epistemology in *Epistemic Luck* (Oxford: Oxford University Press, 2005); Smith, n 3 above; S. Roush, *Tracking Truth: Knowledge, Evidence, and Science* (Oxford: Oxford University Press, 2005), especially in section 2(3).

¹⁴ For current purposes, the discussion sets aside the distinction between justified belief and knowledge. The two are of course different, but the difference does not affect the current discussion. For elaboration see for example Smith, n 3 above, 8-16.

¹⁵ See R. Nozick, *Philosophical Explanations* (Cambridge, Massachusetts: Harvard University Press: 1981).

¹⁶ Compare, however, with J. Hawthorne and J. Stanley, 'Knowledge and Action' 105 (2008) *The Journal of Philosophy* 571 (advancing the argument that only knowledge can provide reasons for action); and J. Stanley, *Knowledge and Practical Interest* (Oxford: Oxford University Press, 2005) (but compare with J. Hawthorne and

Trying to nevertheless explain the apparent correlation between knowledge and evidential rules, Enoch, Spectre and Fisher highlight the following: the cases where our belief is not sensitive (and knowledge is not generated) are also the cases where a legal finding might have eroded the incentive for potential defendants to refrain from illegal action. And this too is because of counterfactuals; it is because even if potential defendants decided to act legally, condemning NSE would still exist and increase their punishment or harm expectancy. And “though the epistemological story is not itself of legal value, and though the instrumental story that is of legal value is not itself epistemologically respectable, both of them still stem from the same source, Sensitivity-style counterfactuals. These are needed both for knowledge (or are in some other closely related way epistemically relevant) and for a reasonably efficient incentive structure.”¹⁷ There is therefore an interesting coincidence between the generation of knowledge based on the sensitivity condition and the legally relevant consideration of incentives.

The authors thus draw attention to the puzzling relation between epistemology and practical considerations that underlie legal decisions. Their account is fundamentally important in this respect. But their analysis gives rise to several difficulties. First, as Fisher notes in a later article,¹⁸ the authors’ account of incentives can be criticised for being partial. A more comprehensive account that considers also the increase in punishment expectancy for guilty defendants following admission of NSE could lead to different conclusions: it could indicate that admitting NSE actually creates incentives for refraining from crime, thus supporting admission. And if this is true, then the epistemological story and the instrumental story actually diverge

O. Magidor, ‘Reflections on the Ideology of Reasons’ (forthcoming) in Daniel Star (ed.), *The Oxford Handbook of Reasons and Normativity*).

¹⁷ Enoch, Spectre, and Fisher, ‘Statistical Evidence, Sensitivity, and the Legal Value of Knowledge,’ n 3 above, 220.

¹⁸ Talia Fisher, ‘The Theoretical Foundations of Evidence Law’ 39 (2015/16) Tel Aviv Law Review 107 at 126-127 [in Hebrew].

rather than coincide. Second, it is not at all clear that counterfactuals indeed play the instrumental role the authors suggest they play.¹⁹ The assertion that potential defendants actually consider evidential rules and apply counterfactuals when deliberating whether to commit crime, and the related conclusion that admission of NSE works to diminish their motivation to commit crime, seem to stretch reality when presented without empirical support. Third, as the authors acknowledge,²⁰ even if the instrumental story were valid, their analysis would still fail to provide any deep explanation of a seemingly surprising state of affairs; it would fail to provide any deep explanation of the fact that counterfactuals seem to play a similar role and lead to similar conclusions in two allegedly different and unrelated contexts.

Thus, giving up the idea that knowledge has legal value and instead considering counterfactuals as having correlating legal and epistemological values does not yet settle the matter. The analysis proposed in this article will follow Enoch, Spectre and Fisher in attributing significance to the epistemological account of NSE; but it will diverge from their analysis in suggesting that an independent instrumental account of NSE of the type the authors are offering is unnecessary: knowledge is itself a legally relevant and valuable category.

Another close and attractive account has been proposed by Martin Smith.²¹ Smith's account of knowledge and legal evidence was initially developed as a purely epistemological account. In his *Between Probability and Certainty: What Justifies Belief*²² Smith has advanced the normic support condition for justified belief. Normic support is defined as follows: E normically supports P iff the situation in which E is true and P is false is less normal, in the sense of demanding more explanation, than the situation in which E and P are true. Smith explains that according to this

¹⁹ Thanks to AL for this point.

²⁰ Above n 4.

²¹ Smith, n 3 above.

²² Smith, n 3 above.

account, a belief is justified if, where it is revealed as wrong (that is, if not-P had occurred), the error is ‘*explicable* in terms of disobliging environmental circumstances, deceit, cognitive or perceptual malfunction, etc. In short, the error must be attributable to *mitigating circumstances* of some kind and thus *excusable*, after a fashion.’²³ Smith distinguishes such errors from errors that cannot be explained and ‘for which one must bear full responsibility – [errors] for which there is no excuse.’²⁴ When it comes to belief based on NSE, Smith points to the logical unavailability of further specific information that has the potential to explain errors:²⁵ if the evidence is that the likelihood of X is 95%, but X does not occur, then it just so happened that it does not occur; non-occurrence does not demand any further special explanation. Accordingly, belief based on NSE is unjustified.

The next phase of development of Smith’s account is made in a recent compelling account of legal evidence.²⁶ In this piece Smith outlines his proposed normalcy condition mainly with reference to the amount of explanation required in cases of error and without reference to notions like mitigating circumstances, excuse and responsibility.²⁷ Smith argues that the normalcy condition accords with legal practice more than the sensitivity condition.

To advance this argument, Smith considers the case of a testimony by a hallucinating witness. A testimony by a hallucinating eye witness can work in one of two ways: if the fact that the witness is hallucinating is made available to the court, then legal practice would be to make no finding based on this testimony. This practice would accord both with Sensitivity and with Normalcy. It would accord with Sensitivity because the testimony can only be the basis for insensitive belief – it will have existed even if the premise it allegedly supports is false. Hence according to

²³ Smith, n 3 above, 41.

²⁴ Smith, n 3 above, 41.

²⁵ Smith, n 3 above, 39.

²⁶ Smith, n 12 above.

²⁷ Smith, n 12 above, 15-16.

Sensitivity there is no justification for belief based on this testimony. Legal practice would also accord with Normalcy: if the court had drawn erroneous conclusions based on such a testimony, no special explanation would have been required. Hence according to Normalcy too there is no justification for belief based on the testimony.

Conversely, if the fact that the witness is hallucinating is not made available to the court, legal practice would accord only with Normalcy and not with Sensitivity. Here, the legal practice would be to assume that the witness is not hallucinating and to make findings based on his testimony. This legal practice does not accord with Sensitivity: here too the witness' testimony can only be the basis for insensitive belief (the testimony will have existed even if the premise it supports is false), and hence according to Sensitivity the court's belief is unjustified. But this legal practice does accord with Normalcy: an error based on this seemingly good testimony requires special explanation (namely that unbeknown to the court the witness was hallucinating), and hence according to Normalcy the court's belief is in fact justified.²⁸

Smith further acknowledges that the legal willingness to convict based on DNA evidence is one case that can be explained with reference to Sensitivity but not to Normalcy.²⁹ He suggests that if

²⁸ Smith, n 12 above, section 3. I will not discuss here Smith's example of Joe and the television set, in which he argues that the statistical evidence is sensitive since the statistics would have been different had Joe not stolen but left the shop empty handed. It can be briefly noted that this is debatable. That Joe belongs in the reference class of those who left the shop with a television set is part of the statistical evidence. To assume that Joe does not belong in the reference class is not (only) to assume that he did not commit the crime – it is to assume that there is no evidence to start with and hence nothing to consider. The mental exercise does not change only P (to not-P) and then considers the status of E; it changes E and P together. It is a bit like considering eyewitness testimony by saying: 'now assume that there is no eye witness testimony because Joe did not commit the crime. In such situation, would there still be an eye witness testimony? Since the answer is no, the evidence is sensitive.' This, of course, is not the way counterfactuals are supposed to work.

²⁹ Smith, n 12 above, section 4.

it can be shown that the law should care about Normalcy, this legal practice may require adjustment; but he does not yet offer a reason why the law should care about epistemological considerations in general and Normalcy in particular.³⁰

Smith's account is attractive and thought provoking. It draws attention to the significance of errors based on NSE inferences. As we saw, in his epistemological account Smith makes reference to questions such as whether one can be excused for errors and whether one is responsible for errors. While his account concerns epistemic responsibility, it seems to invite consideration of the possibility of other moral and non-moral responsibilities, and these might have potential to explain the significance of knowledge in the legal sphere. But Smith's somewhat brief identification of the (epistemic) implications of knowledge is troubling, or at least cannot be easily transferred from the epistemic field to the moral and the legal fields. It is unclear how Smith's account can accord with the normal use of responsibility and excuse: if I am guessing the outcome of a toss of a coin with a diverted centre of gravity based on the likelihoods it demonstrates, and the outcome happens to be different, it can hardly be said that I am fully responsible for my error, or indeed that I cannot be excused. This is all the more so when moral and legal rather than epistemic implications are at issue. In the legal context, it is hard to see how a court can be held not responsible for errors in evaluating eye-witness testimony, but responsible (and even blameworthy) for errors in gate-crasher cases. Indeed, we shall see below that the opposite may be true.

This difficulty is indeed mitigated in Smith's later account of legal evidence, where he no longer refers to notions of responsibility and excuse (but focuses only on the question whether an error

³⁰ Smith notes on p. 23 that 'One potential way to take the argument against cold hit DNA convictions further would be to offer a principled reason as to why the law should care about normic support... If it could be shown that a normic standard is important for the overarching aims or purposes of the legal system, then it could increase the pressure on such convictions.'

requires further explanation). But as Smith acknowledges, this comes at a cost: it leaves unanswered the question regarding the legal value of knowledge.

Assertions

To answer this question, we should examine assertions. This part suggests that epistemic considerations are relevant for the law because legal decisions include assertions of facts; and assertions, in turn, require knowledge.

Let us begin by examining the place of assertions in the legal process. The legal process is composed of three analytically separate stages: fact-finding, liability decisions, and determination of the practical consequences of liability. When deciding, for example, a criminal case, courts do not decide whether it is rational to send the defendant to prison given the evidence; they first decide the facts given the evidence, then the liabilities given the facts, and only then do they make practical decisions based on these two previous decisions.³¹

Factual findings, or at least positive factual findings that give rise to legal liabilities, include assertions of the facts to the parties and to the public. When the court delivers its decisions, such factual findings are delivered assertorically – they are delivered as speech acts that present the relevant factual propositions as true.³² When a court finds that a defendant shot a victim and is therefore criminally liable for her death, it states that the truth is that the defendant shot the victim, and accordingly he is criminally liable for her death.

³¹ Where judges decide the case, their decisions explain how they concluded each fact based on the relevant evidence, and the decisions to convict and punish are based on the decided facts rather than directly on the evidence; and where juries decide the case, they are similarly directed to decide the facts based on the evidence and only then make normative decisions based on the facts.

³² For the definition of assertion see, for example, J. MacFarlane, 'What Is Assertion?' in J. Brown and H. Cappelen (eds.) *Assertion* (Oxford: Oxford University Press, 2011) 79.

While it seems fairly uncontroversial that legal decisions include assertions of facts, an objection should nevertheless be examined. According to this objection, there exists a familiar distinction between the truth and the ‘legal truth.’³³ The ‘legal truth’ is defined as follows: findings of facts and of liabilities made by the court based on legal rules of evidence, procedure, and substantive law.³⁴ Allegedly, since these rules often reflect considerations that are inconsistent with the objective of truth-finding, the ‘legal truth’ can diverge from the truth. Accordingly, legal findings are not really meant to represent the truth. And as they do not present propositions as true,³⁵ they do not include assertions.

There are several responses to this objection. First, the objection assumes that the court’s findings are made in the context of some ‘make-believe’ game about reality. This assumption is unattractive: it is implausible that when a court finds that a defendant committed a crime, all it finds is that it has been legally proven that the defendant committed a crime, and the parties and members of the public should not understand this finding as a claim that the defendant actually committed crime.³⁶

³³ For some of the discussions of this distinction see, R. S. Summers, ‘Formal Legal Truth and Substantive Truth in Judicial Fact-Finding – Their Justified Divergence in Some Particular Cases’ 18 (1999) *Law and Philosophy* 497; M.S. Moore, ‘The Plain Truth about Legal Truth’ 26 (2003) *Harvard Journal of Law and Public Policy* 23. See also Larry Laudan, *Truth, Error and Criminal Law: An Essay in Legal Epistemology* (Cambridge and New York: Cambridge University Press, 2006).

³⁴ For current purposes, the relevant part of this definition concerns findings of fact made based on legal rules of evidence and procedure.

³⁵ Laudan, no 33 above.

³⁶ It can further be noted that the reference to ‘truth’ (legal or otherwise) expresses commitment to a certain fit between all of the court’s determinations and reality, and it reflects understanding that the parties and the public take the determinations as claims about the reality.

Second and relatedly, the distinction between the truth and the ‘legal truth’ is not fundamental as far as it refers to factual findings. A fundamental distinction between the truth and the ‘legal truth’ sometimes refers to findings of liability; here, it reflects an alleged gap between legal liability and moral responsibility, or between substantive legal definitions and moral definitions (for example, ‘for the law she is a thief, but she is not “really” a thief’). Alternatively, sometimes the distinction between the truth and the ‘legal truth’ does refer to factual findings, but in this context it is not fundamental: it merely reflects the gap between absolute certainty and higher levels of risk of error, all within the framework of commitment to ensuring the truth.³⁷ Acknowledging the existence of an unavoidable risk of error is consistent with such commitment.

Third, to the extent that the distinction between the truth and the ‘legal truth’ is more fundamental even in the context of factual findings, it is valid only for findings establishing innocence in criminal trials. Any fundamental distinction between the truth and the ‘legal truth’ is not valid for findings establishing guilt in criminal trials; neither is it valid for findings establishing civil liability or indeed its absence. This has to do with the structures of the criminal law of evidence and of the civil law of evidence.

Let us consider the criminal context first. We can start with an intuitive observation. When a criminal court says that the material facts establishing the defendant’s guilt have not been legally proven by the prosecution, it does not necessarily say that these facts did not exist in reality.³⁸ But when a court says that the prosecution has proved the material facts establishing the defendant’s

³⁷ The civil standard of proof is an example: when a court finds that a fact has been proven to this standard, it remains committed to the truth despite acknowledging a relatively high risk of error. Another example is the law’s decision to put limits on proof of collateral facts: despite allowing some risk of error for the sake of efficiency, this decision does not reflect a brake up with the truth.

³⁸ Yet a series of normative considerations entails that we must treat these findings as if they were true. A defendant who is acquitted must be treated as innocent, even though she may have committed the crime.

guilt, it does seem to say that these material facts existed in reality. What is the source of this difference?

Due mainly to the different costs of false convictions and false acquittals,³⁹ the law of criminal evidence is asymmetrical in its application to prosecution evidence and to defence evidence. This asymmetry works to ensure the truth of findings establishing guilt, but not that of findings of innocence. Indeed, sometimes this asymmetry works to ensure the truth of findings establishing guilt on the expense of ensuring the truth of findings establishing innocence.

Asymmetry can be traced, first, in the criminal standard of proof. The stringent criminal standard of proof (beyond reasonable doubt) works to minimise the number of false convictions at the cost of increasing the number of false acquittals.⁴⁰ Thus, this standard reflects particularly high commitment to the truth of factual findings that establish guilt and lower commitment to the truth of factual findings that establish innocence.

Exclusionary rules of criminal evidence present a similar asymmetry. Relevant prosecution evidence aimed at proving facts that establish guilt is often excluded;⁴¹ it is excluded based on a range of considerations that have nothing to do with the truth and that may indeed clash with the

³⁹ There may be other reasons for this difference, such as the extensive powers of the state to search of evidence – powers that require limitation to prevent abuse; or simply the relevance of some of the considerations only to prosecution evidence.

⁴⁰ See Alex Stein, *Foundations of Evidence Law* (Oxford, Oxford University Press: 2005), 172.

⁴¹ A few examples include the regulation of admission of confessional evidence in sections 82(1) and 76 of the Police and Criminal Evidence Act 1984 (PACE); the discretion given to the court in PACE section 78(1) to exclude probative prosecution evidence where admission would be unfair to the accused; or the *Turnbull* warning that has been laid down in *R v Turnbull* [1977] QB 224 and concerns the special caution required when convicting based on identification evidence introduced by the prosecution.

aim of truth-finding.⁴² Such exclusions of probative prosecution evidence increase the likelihood of false acquittals. By contrast, relevant defence evidence aimed at refuting guilt is hardly ever excluded.⁴³ Resultantly, the likelihood of false convictions is not similarly increased. Thus in the context of exclusions too, the law compromises the truth of findings of innocence but not the truth of findings of guilt.

This asymmetrical nature of the criminal law of evidence affects the status of findings of innocence and guilt. As the law reflects only qualified commitment to the truth of factual findings that establish innocence, the truth and the ‘legal truth’ may well diverge in this context. Accordingly, when the court makes findings of innocence, it does not necessarily present their factual substrate as true, and so the court’s decisions do not include assertions of facts. However, when the court makes findings of guilt, it is guided by law that reflects the highest commitment to ensuring the truth of decisions. The main consideration at play is ensuring this truth, and this consideration is not overcome by other considerations. Thus, in the context of positive decisions of guilt, the truth and the ‘legal truth’ merge. Here, the court’s findings do include presentation of their factual substrate as true. They include, in other words, assertions of facts.

This analysis also makes it clear that any fundamental distinction between the truth and the ‘legal truth’ is not valid for positive or indeed negative findings of civil liability. The law of civil evidence is fairly symmetrical in nature. The civil standard of proof (preponderance of evidence) is designed to ensure a maximal number of true findings overall and a minimal number of errors

⁴² See Laudan, n 33 above. These can include, for example, considerations of human rights, legitimacy, or the need to maintain public trust in the integrity of the legal system.

⁴³ If defence evidence is excluded at all, the exclusionary rule is in a significantly narrower than the equivalent rule for prosecution evidence. See, for example, the broad admissibility of defence evidence of a co-accused’s bad character in section 101(e) of the Criminal Justice Act 2003, and the substantial possibility for a co-accused to disprove a claim that confessional evidence has been extracted by torture or in other conditions that draw mandatory exclusion in section 76A(2) of the Police and Criminal Evidence Act 1984.

overall, be those false positive or false negative errors.⁴⁴ Furthermore, the law of civil evidence hardly restricts the introduction of probative evidence by either side the way it does in the criminal context.⁴⁵ One main reason for this symmetry is the similar and moderate costs of ‘false positive’ and ‘false negative’ errors in civil trials.⁴⁶ Thus when the court makes a finding regarding civil liability, the main consideration at play is truth-finding; and accordingly here too the ‘legal truth’ merges with the truth, and so the court’s findings include assertions of facts.

Thus, much legal decision-making involves presenting factual propositions as true, and accordingly it involves assertions. If this is the case, then courts’ decisions are subject to norms of assertion. Indeed, as we saw earlier, courts decide more than just the facts, and accordingly their decisions involve more than assertions of facts. Courts also make normative and practical decisions based on these facts; and in principle, the norm of practical reasoning is not necessarily identical to the norm of assertion.⁴⁷ However, given that the court’s normative and practical decisions are based on the decided facts rather than directly on the evidence, the norm of (legal) assertion and the norm of (legal) practical reasoning cannot diverge. In the legal context, the norm of assertion and the norm of practical reasoning merge.

We can now examine the norm of assertion and its connection to knowledge. Timothy Williamson has famously suggested the knowledge norm of assertion, according to which “One

⁴⁴ See Stein, above no 40, 143-144.

⁴⁵ See A Choo, *Evidence* (4th ed. Oxford: Oxford University Press, 2015) 19-20.

⁴⁶ *Ibid.* Another reason is the initial symmetry between the parties and their limited power: neither party has powers similar to those the state has when it seeks for evidence in criminal trials.

⁴⁷ For discussion of this question see R. McKenna, ‘Why Assertion and Practical Reasoning are Possibly Not Governed by the Same Epistemic Norm’ (2013) 4 *Logos & Episteme* 457; M. Montminy, ‘Why Assertion and Practical Reasoning Must Be Governed by the Same Epistemic Norm’ (2013) 94 *Pacific Philosophical Quarterly* 57; Stanley, n **Error! Bookmark not defined.** above.

must: assert that P only if one knows that P.”⁴⁸ Williamson suggests that this is a constitutive norm of assertion, analogous to the rules of a game, whose violation calls for non-moral criticism.⁴⁹ In some cases the decision-maker would have good grounds for believing that she knows P when in fact she does not know P because P is not true. In such cases, Williamson suggests, the assertion is reasonable even though the decision-maker in fact lacks warrant to assert.⁵⁰ In these cases asserting constitutes a violation of the rules of the game about which we are relaxed, as it does not undermine the game.

Accordingly, the legal decision-maker only has warrant to assert that which she knows; and she acts reasonably only when asserting that which she has good grounds to believe she knows. This explains why the legal system accepts reliance on the testimony of Smith’s hallucinating eye-witness: since eye-witness testimony typically fulfils the conditions of knowledge, the decision-maker has good grounds to believe she has acquired knowledge based on it, and she therefore acts reasonably.

But a question similar to the one with which we started nevertheless remains: why should the legal process involve assertions at all? Why shouldn’t it focus only on practical questions (how to treat defendants), with the implication that the relevant norm would be a practical norm like one of accuracy rather than one of knowledge? How are legal decisions different from, say, medical decisions that do not involve assertions and that can legitimately rely on NSE regarding, for example, correlation between age and response to treatment? In other words, it can be wondered whether the legal process should not be radically reformed to resemble other practical decisions where the practical conclusion is drawn directly from the evidence.

⁴⁸ Williamson, *Knowing and Asserting*, n 7 above, 494; see also Williamson, *Knowledge and Its Limits*, n 7 above; Hawthorne, n 7 above; Stanley, n 7 above.

⁴⁹ Williamson, *Knowing and Asserting*, n 7 above, 489-492.

⁵⁰ Williamson, *Knowing and Asserting*, n 7 above, 509.

Williamson's analysis of the knowledge norm of assertion, which draws on themes similar to those implied in Smith's epistemological account, provides the beginning of an answer. Williamson suggests that the knowledge norm of assertion reflects the significance of relations of responsibility: "To make an assertion is to confer a responsibility (on oneself) for the truth of its content; to satisfy the rule of assertion, by having the requisite knowledge, is to discharge that responsibility, by epistemically ensuring the truth of the content. Our possession of such speech acts is no more surprising than the fact that we have a use for relations of responsibility."⁵¹ Thus, not every instance of inferring from evidence involves responsibility for the truth of that which is inferred; but once one asserts that which has been inferred, one also takes such responsibility. And if responsibility is legally important, assertions are legally important.

Like Smith's responsibility, the responsibility that Williamson discusses here is epistemic responsibility that subjects one to non-moral criticism. While important in its own right, when it comes to the question posed here this responsibility seems like a non-starter: there seems to be no stronger reason to insist that the legal decision-maker be epistemically responsible for the content of her decisions than there is reason to insist that the medical doctor be epistemically responsible for the content of her decisions. But the discussion of epistemic responsibility opens the door to wider consideration of the responsibilities of assertors in practical contexts. And if it can be shown that some such responsibilities are important in the legal context, it will become clear why legal decisions must involve assertions and must not jump from evidence to normative and practical conclusions.

⁵¹ Williamson, *Knowing and Asserting*, n 7 above, 522. See also Williamson, *Knowledge and Its Limits*, n 7 above, 268.

Responsibility

This part considers the responsibility of decision-makers for the burdens of practical errors. It begins by demonstrating that assertions give rise to such responsibility. Since NSE cannot be the basis for assertions, it cannot establish responsibility. Next, assertions are set aside and an additional characteristic of NSE is discussed that similarly prevents it from giving rise to responsibility for the burden of errors. This characteristic is the logical impossibility to avoid errors in the reference class when deciding based on NSE. A possible connection between the two responsibility-denying characteristics of NSE (the inability to assert based on it and the logical impossibility of getting all the cases right based on it) is left to be explored in future research.

Responsibility (I): Assertions

Where errors are practically burdensome, assertions are associated not only with epistemic responsibility but also with responsibility for this burden. Sanford Goldberg's recent analysis of the responsibilities of assertors points in this direction. Goldberg suggests that others are entitled to expect an assertor to know the content of her assertion, and that the assertor is responsible to satisfy these expectations about his epistemic position.⁵² He explains that some of the entitlements of others are connected to specific professional or other roles of the person making the statement, and others are more general entitlements shared by all members of the epistemic community as such.⁵³ According to Goldberg, what makes others entitled to hold these

⁵² See Sanford Goldberg, *To the Best of Our Knowledge: Social Expectations and Epistemic Normativity* (Oxford and New York: Oxford University Press, 2018); S. Goldberg, 'Should Have Known' (2017) 194 *Synthese* 2863; S. C. Goldberg, *Assertion: On the Philosophical Significance of Assertoric Speech* (Oxford: Oxford University Press, 2015), section 1.1; and see his discussion of ethics in section 7. A concise statement of this position can be found in Goldberg, n **Error! Bookmark not defined.**⁵² above, 127 ("My claim is that epistemic responsibility in the broader sense... is simply a matter of satisfying all of the legitimate epistemic expectations on one.")

⁵³ For elaboration see Goldberg, n 52above, chapter 5.

expectations is the social-institutional context and its underlying rationale: we would not have exchanged information and practiced as we do (generally or in specific contexts) if it were not for these mutual expectations. Thus, the source and conditions of responsibility are in social practice and in its constitutive rationale.⁵⁴

Despite references to epistemic expectations, Goldberg's analysis seems to go beyond epistemic responsibility. Goldberg treats assertions as social institutions similar, for example, to promises. He notes that our epistemic presuppositions inform not only our epistemic practices but also our practical engagements with one another.⁵⁵ Accordingly, his account implies that assertors may have moral or practical (rather than merely epistemic) responsibilities. However, it is not clear that assertions alone can give rise to expectations that are associated with actions. Possibly, Goldberg refers to the fact that some statements and assertions, such as legal assertions of liability, are followed by fitting actions. But if this is the case, then it is the subsequent actions rather than the statements that give rise to the relevant responsibilities; and so the relevant norm would always be a practical norm such as the norm of accuracy and error minimisation. There is no apparent reason why we might have a moral expectation that an action be based on knowledge. Goldberg identifies the source of responsibility in social practices and in their

⁵⁴ Goldberg writes: "But we might ask: what *entitles* us to have such epistemic expectations of one another?

My answer is that these epistemic expectations reflect a number of presuppositions that inform our engagements with one another. These engagements are of two main types: information-exchanging engagements (where the aim is to share information), and practical engagements (where the aim is to act together or in coordination with one another)." (Goldberg, n 52 above, 106-107).

⁵⁵ Goldberg writes: "our practices of information-exchange and practical engagement with one another have a rationale supporting them – that is, participation in these practices avoids practical irrationality – only if we are entitled to expect certain things of other epistemic subjects; but these engagements *do* have a rationale supporting them (one can deny this only at the cost of a profound distortion of our lives as fundamentally social creatures); so we are entitled to have the expectations." (Goldberg, n 52above, 110).

rationales; but it is at least arguable that social practices and their rationales can hardly work to legitimise our expectations from one another. After all, existing practices may not have a legitimate rationale, or they may reflect an illegitimate way to meet a legitimate rationale.

To motivate the argument on assertors' responsibility for the burdens associated with practical errors it is worthwhile diverting our look to general accounts of responsibility. The literature has made impressive progress in highlighting the types and nuances of responsibility,⁵⁶ and accordingly it provides more than one way to analyse assertors' responsibilities for these burdens. Scanlon's account of responsibility is particularly helpful here, as it focuses on judgement and captures something important about the decision-maker's responsibility (or lack of it) for stumbling over hurdles. Thus, it usefully diverts our attention from the decision-maker's responsibility for burdens she imposes on others when erring to her responsibility for the burdens that might be imposed on her when erring.

Scanlon identifies what he terms 'substantive responsibility.' Substantive responsibility concerns an actor's obligations and his claims against others.⁵⁷ Where it comes to a burden that the actor himself carries, the actor is substantively responsible for that burden where and only where the social arrangement that allocates this burden has provided the actor with sufficient opportunities to make a valuable choice that would avoid the burden.⁵⁸ Substantive responsibility, in turn, diminishes the actor's grounds for rejecting the social arrangement that allocates the burden.⁵⁹

⁵⁶ See especially P.F. Strawson, 'Freedom and Resentment' 48 (1962) *Proceedings of the British Academy* (Gary Watson ed.) 1; G. Watson, *Agency and Answerability: Selected Essay* (Oxford: Oxford University Press, 2004); M. McKeena, *Conversation and Responsibility* (Oxford: Oxford University Press, 2012); D. Shoemaker, *Responsibility from the Margins* (Oxford and New York: Oxford University Press, 2015).

⁵⁷ Ibid.

⁵⁸ Scanlon, n 8 above, 251. The value of choice, in turn, depends on the reasons that make us prefer choice-sensitive arrangements – including, for example, instrumental reasons, reasons having to do with the

Legal errors can be burdensome not only to the defendant and the public, but also to the decision-maker. A legal error becomes burdensome to the legal decision-maker where the decision-maker imposes or reallocates burdens without having trust in the truth of her decision. Where it ends in an error, the decision-maker's frustratingly regrettable decision and the burdens associated with it weigh on her too. The legal decision-maker who falsely convicts a defendant and sentences him to imprisonment while ignoring her own lack of trust in the truth of this decision will carry a burden for the rest of her life. This might explain the intuition that legal decision-makers (and indeed other decision-makers who impose or reallocate burdens) should be entitled to 'listen to themselves.'⁶⁰ Because an error might become burdensome to her if she does not 'listen to herself,' the legal decision-maker owes it to herself to decide only when trusting the truth of her decision, if at all possible; and if she does not trust the truth of any relevant proposition, she owes it to herself to refrain from imposing new burdens or reallocating any existing burdens. It is this burden of an erroneous decision whose truth she never trusted that the legal decision-maker may

representative value of choice, or reasons having to do with the symbolic value of choice. See Scanlon's discussion, n 8 above, 251-253.

⁵⁹ Scanlon draws a distinction between responsibility as attributability and substantive responsibility (For an initial account see Scanlon, n 8 above, 248). Responsibility as attributability concerns the appropriateness of taking an action as the basis for moral appraisal of the actor (ibid). Assertions give rise to responsibility in this sense. This can be inferred from Scanlon's discussion of responsibility for beliefs (Scanlon, n 8 above, 22), where he suggests that we can be held responsible for our beliefs and other judgement-sensitive attitudes in the sense that these can be attributed to us, and we can be asked to defend them according to relevant canons and be appraised in the light of these canons for our beliefs and attitudes. Yet as may be clear from this discussion, any "moral" criticism to which the assertor may be subject would target her inability to defend her assertion according to relevant canons, such as the knowledge norm. Thus, this responsibility comes to what we have addressed so far, following Williamson, as epistemic responsibility.

⁶⁰ This will be discussed further below, when considering the role that the decision-maker's responsibility plays in the legal system.

or may not be substantively responsible for, depending on the opportunities to avoid the burden that the decision-making arrangement allows her.

And here, epistemic considerations become relevant. The legal decision-maker can avoid this burden if she gains trust in the truth of her decisions by epistemically ensuring them through acquisition of the requisite knowledge. Minimising the risk of error would not be enough, as the decision-maker may well have no trust in the truth of her decisions even in cases where the risk of error is negligible.⁶¹ But epistemic credentials can allow her to avoid the burden.

Accordingly, when denied the opportunity to develop trust in the truth of her decisions by epistemically ensuring them through acquisition of knowledge, the decision-maker is not substantively responsible for the burden of any erroneous decisions she makes despite having no trust in their truth. She would then have valid grounds to reject the decision-making arrangement that did not allow her opportunity to avoid this burden. She may justifiably ask ‘why did you make me decide based on such evidence? Why did you not let me listen to myself and avoid this outcome?’ But once allowed the opportunity to develop trust in the truth of her decisions by epistemically ensuring them through acquisition of knowledge, the decision-maker becomes substantively responsible for the burden of any erroneous decisions she makes despite having no trust in their truth. Once allowed the opportunity to ensure that there is proper justification for believing in the truth of her decisions - justification provided by knowledge-generating evidence -

⁶¹ In this, the decision-maker is different from others who may carry the burden of errors, such as the defendant or the public. The defendant or the public have no valid claim against the system or indeed against the decision-maker as long as the risk of errors is minimised (except for the claim regarding tragic errors that will be discussed below). For this reason, the legal decision-maker who does not assert facts based on knowledge is not morally responsible for error in the first sense Scanlon suggests, namely attributability or answerability.

the decision-maker who fails to take this opportunity and errs no longer has valid grounds to reject the decision-making arrangement.

If this is correct, then responsibility is tied with the assertoric foundation of practical decisions. A legal decision-maker who is not required to assert facts but rather to infer liability directly from (non-knowledge-generating) evidence is not substantively responsible for burdensome errors, and she has valid grounds to object to the legal decision-making arrangement in case of such errors. By contrast, a legal decision-maker who is required to make assertions based only on knowledge-generating evidence is substantively responsible for burdensome errors, and she has no valid grounds to complain if she nevertheless decides without having faith in her decision and ends up erring. Accordingly, if the legal decision-maker's substantive responsibility for errors is important, legal decision-making should involve assertions.

Before moving on, it may be noted that we are now in a position to better understand the way we describe our judgements with respect to P where P is established based on NSE. Consider again the toss of a coin whose centre of gravity is diverted in a way that creates a 0.9 likelihood of it falling on side X rather than on side Y. When asked what was the outcome of yesterday's toss which I did not witness, I might say something like 'it was probably X.' When pressed with 'do you know that it was X?' I may well say something like 'no, I don't know; I can only guess.' But when I say 'I don't know, I can only guess,' I make more than an epistemological statement; I also make a statement of practical normativity - that I am aware that I cannot epistemically ensure the truth of my statement when I rely on such an inferential procedure, and that therefore I will not be substantively responsible for such the implications of an error if it occurs – in such a case, I will have a claim against whoever asked me to make a prediction.

Responsibility (II): The Logical Possibility of Getting All the Cases Right

In addition to its inability to provide basis for assertions, controversial NSE has another characteristic that prevents it from giving rise to the decision-maker's substantive responsibility

for errors. The discussion that follows first identifies this characteristic and then examines its implications for substantive responsibility.

Controversial NSE presumes that there are some cases of not-P in the relevant reference class as a matter of certainty. If, for example, the evidence is that 90% of tall people are car thieves, the evidence presumes that 10% of the tall people are not car thieves. This means that under certain hypothetical conditions relying on this evidence would guarantee errors: if inferences are made from the evidence to each and every case in the relevant reference class, errors are a certainty. Relying on this evidence to decide the liability for car theft of each and every tall person in turn would lead to some errors as a matter of certainty; and similarly, relying on the evidence to decide whether a particular tall person has stolen a car over and over again would also lead to errors as a matter of certainty. In other words, when relying on controversial NSE it is logically impossible to get all the cases right.

In this, controversial NSE is different from other evidence that the legal system tends to admit. Other evidence does not presume that there are as a matter of certainty cases of not-P in the relevant reference class, and accordingly when relying on it, it is logically possible to get all the cases in the reference class right. Any errors that do occur could, in principle, have been avoided.⁶² To see more clearly how the logical possibility to get all the cases in the reference class right fares in inferences from different types of evidence, and to prepare the ground for an argument about responsibility, let us observe each type of evidence in turn.

We can start with ‘case specific’ evidence that supports explanatory inferences, such as eye witness testimony where the existence of this testimony (E) is explained by the defendant having committed the crime (P). Here, the bare evidence that an eye witness exists still presumes some

⁶² Such errors would usually be the result of an unpredicted alteration in conditions that excludes the case from the relevant reference class; and while not predicted, such an alteration could, in principle, have been predicted with sufficient skill, care and effort – thus making the errors avoidable.

instances of not-P in the reference class (some eye witness testimonies are unreliable). But such bare evidence is not yet a legal evidence. The legal evidence is the examined testimony, which is the bare evidence after it has undergone a process of narrowing down its relevant reference class almost to an individual level (the class of eye witnesses who are confident, have good eyesight, were alert at the time of the incident, do not suffer from hallucinations, etc.). The process of narrowing down the relevant reference class to an almost individual level requires using the factfinder's skill, expertise and effort. Following this process, the inference is such that it is logically possible for it to lead to the correct results if repeated in all relevant instances (it is not impossible that any eye witnesses whose testimony is characterised by these 100 signs of truth and no signs of no-truth would be reliable; the set of such eye witnesses who are unreliable may well be an empty set). At this point, errors in the emerging narrow reference class are by no means a certainty.

This technique of tentatively eliminating the possibility of not-P in the reference class can also be used in 'case specific' evidence that supports predictive inferences (rather than explanatory ones). One legal example is evidence that the defendant had a motive to commit the crime, based on which the proposition that the defendant committed the crime is inferred. Here, of the reference class of defendants with motives is narrowed down to the class of defendants with specific characteristics who have a motive with specific characteristics. The decision-maker may then reach the conclusion that the likelihood of refraining from crime for any person of the defendant's characteristics who is so strongly motivated is negligible (the group of such people may well consist of virtually zero people). Here too, errors in the now narrow reference class are by no means a certainty.

Other times the bare evidence already suggests that the occurrence of not-P in the reference class is not a certainty, or even that the likelihood of not-P ever happening in the reference class is negligible, and accordingly following the procedure will not necessarily lead to errors even if

repeated for the entire reference class (it is logically possible to get all the cases right). This is the case in probabilistic inferences that rely on non-probabilistic laws of nature. Examples would include evidence that an apple fell from its tree, leading together with the laws of gravity to the finding that the apple fell by the tree; or evidence that Ernie dropped a garbage bag down the chute, leading together with the laws of gravity to the finding that the bag is now in the basement. Such inferences are implicitly based on the nearly-zero likelihood of a different course of development (not-P) in such conditions given the relevant non-probabilistic gravitational laws. If at all, not-P will only happen in rare cases that include unexpected developments that alter the presumed factual conditions (i.e. exclude the case from the reference class). The evidence is therefore such that it may well lead to the correct result in all the cases in the reference class, and errors are by no means a certainty.

This is also the case in probabilistic inferences that rely on probabilistic laws of nature, where these laws of nature establish a merely negligible likelihood of tracing not-P in the reference class. In such cases not-P is by no means certain to appear in the reference class. Presumably, such is the inference from DNA evidence, where it is possible that the set of people whose DNA matches the sample at a level like that of the defendant and to whom the sample does not belong is empty.⁶³ In such cases the occurrence of not-P in the reference class is far from certain; rather, it is negligible given laws of nature.⁶⁴ Accordingly here too errors are not a certainty.

By contrast, as we saw, inferences based on controversial NSE assume not-P in the reference class, and accordingly it is logically impossible to get all the cases right when making such

⁶³ If it is not empty, this is because the factual conditions are not as we assumed them to be.

⁶⁴ And to the extent that DNA evidence presumes that the set is not empty, more contextual data about the sample are needed in order to exclude the possibility that the sample belongs to someone other than the defendant; and in such a case, the evidence loses its statistical nature. To the extent that the legal system is willing to convict in such cases without further contextual data, it can be subject to criticism.

inferences over and over again. In these inferences, the likelihood that not-P would happen at some point in the reference class is as high as 1. NSE inferences do not involve the process of narrowing down the reference class; and if they do involve such a process, the evidence is no longer naked statistical evidence. NSE inferences also do not presume that if at all, not-P would happen only if the background conditions alter unexpectedly (and thus in fact not-P would happen outside the reference class). Rather, the assumption is that there would be cases of not-P in the reference class where the conditions are as we presume them to be. Last, NSE inferences do not leave significant room for the possibility that not-P would happen in the reference class; in fact, they do not leave any room for this possibility. Thus, as long as the inference is based on controversial NSE, the inferential procedure presumes errors as a matter of certainty if repeated for the entire reference class; it is logically impossible to get all the cases right.

Note that the relevant possibility to get all the cases in the reference class right is logical rather than practical. Human weaknesses and limited resources mean that it is always practically impossible to get all the cases right regardless of the type of evidence. Burdens of proof are the legal mechanisms for dealing with this practical impossibility to avoid errors even where they are not logically doomed to occur. They dictate what decisions should be taken when the decision-maker trusts the truth of a proposition but is still aware of a risk of error that essentially remains even after exhausting the legal examination. Under the current standards of proof, in civil proceedings the decision-maker should make a positive finding if the likelihood of error is higher than zero but lower than 50% (for example, if the eye-witness testimony is sound but not entirely consistent and coherent); and in criminal proceedings the decision-maker should make a positive finding if the likelihood of error is higher than zero but lower than, say, 5%-10% (for example, the eye-witness testimony is consistent, coherent, sits comfortably with other evidence, etc.). But the legal civil and criminal standards (which are not merely probabilistic standards) are only met where both conditions are met, namely it is logically possible to avoid errors in the reference class and in addition, likelihoods of error are low enough.

We can now examine how the abovementioned difference between controversial NSE and other evidence impacts the legal decision-maker's substantive responsibility for errors. We saw that a practical error is burdensome for the decision-maker when produced without her having trust in the truth of her decision. But a decision-maker can hardly trust the truth of her decisions where they are based on evidence that is logically certain to produce errors in the reference class. When the evidence is such, the decision-maker knows that some of the decisions in the 'pool of decisions' that can be made based on the evidence are logically certain to be wrong, but there is no knowing which.

Thus, being fair to the decision-maker and further allowing the decision-maker sufficient opportunity to avoid burdensome errors requires adopting decision-making procedures that logically allow getting all the cases in the reference class right, preferably by using the decision-maker's skills, efforts, and indeed choices. Such procedures would allow the decision-maker, for example, to examine witnesses carefully and contentiously to narrow down the reference class to an almost individual level, so that the likelihood of errors in the reference class will be (almost) zero; or to carefully examine background conditions in order to verify that the case indeed belongs in the reference class. Accordingly, if the legal decision-maker is to be substantively responsible for all her errors, decision-making procedures must exclude controversial NSE that make it logically impossible to get all the cases right.⁶⁵

⁶⁵ Before moving on we can briefly glance back at Smith's normic support account of knowledge. It may well be the case that the factfinder's substantive responsibility for errors gives rise to responsibility of a type that is implied in Smith's discussions. Given that the evidence is such that the factfinder could use her skills to avoid error, and given that the error is burdensome for society too, it is possible that the factfinder is also responsible in the sense that she is obliged to provide explanations for such errors – the explanations to which Smith refers in his account. If she does not provide such explanations, she may be criticised for it.

Assertions and the Logical Possibility to Avoid Errors: A Mere Coincidence?

The analysis thus far has shown that a decision-maker cannot trust the truth of decisions based on controversial NSE since (1) controversial NSE cannot generate knowledge that would epistemically ensure her assertions; (2) it is logically impossible to get all the cases right when relying on controversial NSE. As the decision-maker cannot trust the truth of such decisions, she is not substantively responsible for the burden associated with this lack of trust in cases of error. The question is then whether the two abovementioned characteristics of NSE that prevent the decision-maker from trusting the truth of her decisions merely coincide, or is there a deeper connection between epistemically ensuring (knowing) and having the logical possibility to get all the cases right. Answering this question requires an extensive examination of the conditions of knowledge. For the purposes of this article, I shall only note that this question may merit further exploration.

The Role of Responsibility

There are good reasons to maintain the legal decision-maker's substantive responsibility for burdening errors. First, we saw that lack of substantive responsibility means that the legal decision-maker has a valid claim that the system is unfair to her. Thus, if we are to avoid unfairness to the legal decision-maker, we should have in place a legal system that is based on assertions and subject to the knowledge norm. Such a legal system would not allow using NSE as a basis for decisions. Second, if a decision-maker has a valid claim against the system, the legitimacy of the system may be undermined. Here again, avoiding this consequence requires that legal verdicts involve assertions of guilt or liability, and this means that they cannot be based on NSE.

Legal decisions are different in this respect from other practical decisions. In other practical contexts, similar errors are not as burdensome to the decision-maker, and to the extent that they are burdensome, her lack of responsibility for the burden does not necessarily go hand in hand with valid claims against the decision-making arrangement. In other practical contexts most of the decisions can only be made using NSE. A medical doctor, for example, can only predict the effect of treatment on a patient based on statistical information; avoiding burdening errors can thus only be achieved by avoiding the profession. In such ‘no-other-way’ circumstances errors are less burdensome to the decision-maker (as practically, she could not have made the decision in any other way). To the extent that errors are burdensome but outside the decision-maker’s responsibility, the decision-maker’s lack of responsibility for the burden does not mean that she has grounds for rejecting the decision-making arrangement (as practically, this is the only possible arrangement and rejecting it would lead to dead-end). Indeed, the doctor’s claim against the medical decision-making arrangement in cases of error would be a weak one.

Legal decisions, however, can be (and usually are) based on knowledge-generating evidence. Thus errors produced by decisions in whose truth the decision-maker has no trust do burden her, and there is no strong reason to place the decision-maker in a position where she has no sufficient opportunity to avoid this burden. In such circumstances forcing her to choose between carrying the burden and changing profession would be unreasonable. Thus, the legal decision-maker’s lack of responsibility does strengthen her ground for rejecting the decision-making arrangement. Consequently, considerations of fairness and legitimacy come to play.

It may be interesting to note here that when it comes to legal decision on causation, the legal system is closer to other practical systems in being more lax about statistical evidence. Arguably, the reason for this is that when it comes to causation, the possibility to rely on knowledge-generating evidence is very limited. There is hardly ever case-specific evidence available that would indicate that it was the defendant’s act rather than another operating factor that caused the

outcome. This is all the more so in cases of causation by omission, where it needs to be shown that had the defendant acted, the outcome would not have been brought about.⁶⁶ In all these cases causation can only be established with reference to probability calculations (e.g. in cases of multiple factors that might have caused the outcome) or to statistics on causation in the relevant reference class (e.g. in cases of causation by omission). Thus, when deciding causation the legal decision-maker's position is similar to that of doctors and other professionals: her errors are less burdensome to her, and in any case, her lack of responsibility does not mean that she has valid grounds to reject the decision-making arrangement.

This seems to have had rather far-reaching implications for proof of causation in civil cases: it has not only allowed reliance on NSE but also opened the door for lowering the standard of proof for causation below preponderance of evidence where considerations of justice for the parties justify such a move.⁶⁷ In most of the relevant cases several liabilities are being decided even though it is known that only some of them are true.⁶⁸ Had such decisions been required where case-specific evidence is available, the decision-maker would have had a valid claim against the arrangement: she could have argued that she was denied the opportunity to make decisions she trusted in conditions where it is possible to allow her this opportunity. But since the decisions are legitimately based on NSE, the decision-maker's claim against the decision-making arrangement is weak. Requiring her to decide several liabilities despite knowing that some of the decisions are wrong adds little to what is legitimately required from her anyway in an NSE regime (namely to

⁶⁶ For a discussion of the problems in proving causation by omission see S Tofaris and S Steel, "Negligence Liability for Omissions and the Police" (2016) 75 *Cambridge Law Journal* 128.

⁶⁷ See Sandy Steel, "Justifying Exceptions to Proof of Causation in Tort Law," (2015) 78 *MLR* 729; Sandy Steel, *Proof of Causation in Tort Law* (Cambridge, CUP: 2015).

⁶⁸ *Ibid.*

decide despite not trusting the truth of her decisions). It does not give rise to any new and valid claims against the decision-making arrangement.⁶⁹

Another reason why the legal decision-maker's substantive responsibility is important is that it plays a role in ensuring fairness to defendants. The dilution of the authority's responsibility for errors is a central building block of legal tragedies that involve special unfairness to the defendant. Elsewhere, I have argued that false convictions based on NSE are profoundly tragic in the Aristotelian sense: they are false convictions of a defendant who managed to beat the odds

⁶⁹ Sandy Steel has defended three exceptions to the civil standard of preponderance of evidence in proof of causation (*ibid*). Steel's proposed defence relies on considerations of justice for the parties. Naturally, all of Steel's examples are NSE examples. But let us assume for a moment that 'case specific' evidence is freely available for proof of causation. Consider, for example, the application of Steel's Defendant Indeterminacy Rule that concerns cases where it is impossible to prove on balance of probabilities which defendant amongst a group of defendants was the cause of C's injury. Steel gives the following example: two hunters shot different bullets in the direction of C, but a hospital employee X maliciously disposes of the bullet in a way that makes it impossible to identify the injurer based on the injuring bullet. Here, Steel convincingly defends the position that both D1 and D2 should be liable to C in full or in proportion to the likelihood that each of them was a cause of the injury. But consider the following variation on Steel's example, where the evidence is 'case-specific': two of X's assistants testify that they saw X disposing of the bullet. The two assistants are equally reliable witnesses, but one of them testifies that it was D1's bullet and the other testifies that it was D2's bullet. Here, it seems hard to defend the proposition that a court may find the two Ds liable. Such a finding would lead to justified claims by D1 and D2 that the court just failed to do its job. If the court really cannot decide which of the testimonies is more reliable, an acquittal for lack of sufficient evidence seems like the reasonable and expected outcome (though really we would expect the court to be able to narrow reference classes further and decide accordingly). Here, requiring the court to make a finding against the two defendants would provide grounds for a claim by the decision-maker that she is required to make a finding in whose truth she has no trust, where it is possible to refrain from such a requirement.

and refrain from crime based on the very odds that he heroically beat.⁷⁰ Such a convicted defendant resembles a tragic hero: he has made a fairly innocent error that has put him in the claws of the crime-commission statistics (an error such as associating with his deprived neighbours rather than excluding himself from this reference class by reading in the library all day long); and despite heroically beating the crime-commission statistics and refraining from crime commission notwithstanding external pressures, this error ends up in the completely disproportionate disaster of a false conviction.⁷¹ Such a false conviction, it was argued, involves special unfairness to the defendant.

This account of legal tragedies focuses on the normative significance of the defendant's original error as a cause of the disastrous outcome. If the legal analysis of causality were to apply to the defendant's tragic error,⁷² this error would have been analysed as the sole normatively significant cause for the disastrous outcome. No other actions by other agents are available which might function as causes (rather than as background conditions). And this is the main characteristic of an Aristotelian tragedy: the actor, whose character (or fate) have prevented her from directing her life well in the face of the limitations of the external world, is the only normatively significant cause for her own disaster.

But what would have happened had the legal decision-maker born responsibility for the outcome? In such circumstances, a legal analysis would have identified two normatively significant causes in the causal chain that leads to the disastrous false conviction: in addition to the defendant's

⁷⁰ [Bad character evidence article].

⁷¹ I have further argued that this account can be extended beyond the criminal domain to other contexts in which legal determinations of liabilities are made; but for purposes of convenience, the following discussion focuses on the falsely convicted defendant.

⁷² See Hart and Honoré, *Causation in the Law* (2nd edition, Oxford University Press 1985); *R v Cheshire* [1991] 3 All ER 670; *R v Jordan* (1956) Cr App R 152 (CA).

error, the factfinder's error for which she can be held responsible has now become such a cause.⁷³ This error affects the normative evaluation of the defendant's error. As a result, the story becomes less typically tragic: it is no longer a story of a defendant whose fairly innocent error is the source of her own eventual distraction. Rather, it is the story of a defendant who has had a particularly bad luck: she made an error from which she could yet have escaped, but unfortunately this error was combined with another avoidable and normatively significant error by the legal factfinder, and the unlucky combination of errors has ended up in a disaster. Such a story is fairly similar to that of a false conviction of an unfortunate defendant whose imperfect presentation of her line of defence was erroneously rejected by the factfinder. This story does not involve the special unfairness to the defendant that characterises tragic false convictions.

If this is true, then it is the foregoing of responsibility of the factfinder for the error that establishes the defendant's error as the sole normatively significant cause for the disaster. Accordingly, foregoing the factfinder's responsibility would turn the false conviction into a tragic one that is particularly unfair to the defendant.

Conclusions

The question whether epistemological considerations are relevant for practical decision-making has drawn considerable attention in the legal literature on naked statistical evidence. This article has suggested that legal decisions are different from other practical decisions because they are – and they must be – founded on asserted facts rather than directly on evidence. Accordingly, in the legal context the normative category of assertions bridges the gap between the epistemological and the practical. Assertions of fact are subject to the knowledge norm, and relatedly they entail responsibility for errors. And, it has been argued, such responsibility is

⁷³ Compare with Hart and Honoré, *ibid.*

essential if the legal system is to maintain its legitimacy and to avoid unfairness to decision-makers or to defendants. If the argument advanced here is valid, it is clear why the legal system is reluctant to admit controversial NSE that cannot generate knowledge, even when it significantly increases the likelihood of facts in issue.

The article has further pointed to a coincidence between the inability to generate knowledge and to assert based on NSE and the logical impossibility to avoid errors in the reference class when relying on NSE: much like the first characteristic, the second characteristic also does not allow holding the decision-maker responsible for errors. Whether or not there is a substantive connection between the inability to generate knowledge and the logical inability to avoid errors is left to be researched.